

Enhancing Reading Skills in EFL Young Learners with Mild Intellectual Disabilities through Music Intervention

Bentolhoda Rajaee¹, Kamran Rabani Ebrahimipour², Neda Fatehi Rad^{1,*}

¹Department of English Language, Kerman Branch, Islamic Azad University, Kerman, Iran

²English Language and Literature Department, Shahid Bahonar University of Kerman, Iran

Received: 19.11.2023 • Accepted: 12.01.2024 • Published: 13.01.2024 • Final Version: 29.01.2024

Abstract: Children with Intellectual Disability (ID) often encounter challenges in developing crucial cognitive-linguistic functions, particularly reading comprehension skills. Moreover, music therapy has demonstrated effectiveness across diverse subjects and participant groups. Examining the existing literature on the influence of music therapy on the improvement of language skills among EFL young learners with mild intellectual disabilities in the Iranian context reveals a noticeable scarcity of research in this area. To address this gap, this study aims to investigate the influence of music on the reading comprehension abilities of Iranian EFL primary learners with mild intellectual disabilities using an experimental design. To this end, thirty-five participants were recruited from a special education institution. A two-way analysis of variance (ANOVA) was conducted to examine potential statistically significant differences between the control and experimental groups. The findings revealed a significant improvement in post-reading test scores among students in the experimental group compared to those in the control group. Moreover, no statistically significant differences emerged when analyzing the data based on gender and age stratifications. These results provide valuable insights for stakeholders, emphasizing the efficacy of incorporating music to enhance reading comprehension in children with mild intellectual disabilities.

Keywords: Mild Intellectual Disability, Music Therapy, Reading Comprehension, Primary Language Learners

1. Introduction

The acquisition of written material by students is dependent on possessing reading comprehension skills, considered fundamental for learning (Suk, 2016). A plethora of scholars, such as Tunmer and Hoover's (2017) highlighted reading as a complex cognitive process involving various mental capabilities. Intellectual disability (ID), previously termed mental retardation, represents a pervasive developmental disability with criteria including IQ below 70-75, limitations in adaptive domains, and onset before 18 (AAIDD). Children with ID often exhibit slower or divergent developmental patterns compared to typically developing peers. These Children commonly face reading difficulties, attributed to deficits in memory, reasoning, decoding, and reading fluency (Lemons et al., 2018; van

* Corresponding Author: nedafatehi@yahoo.com

Wingerden et al., 2017), nonverbal intelligence and temporal processing (van Wingerden et al., 2018). The therapeutic potential of music, extending beyond mood elevation, has been explored in various contexts, including cancer treatment, attention deficit disorder, pain management, and pedagogy (Coombes, 2021; Darvishi et al., 2021; Deng, 2019; Gramaglia, 2019). In educational setting, music has shown positive effects in enhancing school performance, conduct, and interpersonal skills for students with special needs (Hourigan & Hammel, 2017; Jacob & Pillay, 2021; Que, 2020) and children with mental issues (Oluseyi, 2021).

Regarding the scarcity of research on the therapeutic impact of music on the development of reading skills in EFL young learners with intellectual disabilities in Iran, coupled with the increasing recognition of the significance of employing diverse strategies to foster reading skills in children with ID, it is evident that further investigation into this matter is reasonable. Furthermore, the presence of contradictory results in existing scholarly literature necessitates further empirical investigation to establish a deeper comprehension of this topic. Therefore, this study aims to address the following research questions:

RQ1. What is the effect of music on the development of reading skills in EFL young learners with intellectual disabilities?

RQ2. Do male EFL young learners with intellectual disabilities demonstrate a higher likelihood of developing reading skills when exposed to music?

RQ3. Do EFL younger learners with intellectual disabilities exhibit an increased likelihood of developing reading skills when exposed to music?

2. Literature Review

According to Suk (2016), the acquisition of any form of written material by students necessitates the possession of reading comprehension skills, which are considered to be the fundamental and essential learning instrument. Numerous scholars (e.g. Ellis, 2016; Kim, 2017; Tunmer & Hoover, 2017) believe that the act of reading is widely recognized as a complex cognitive process that involves various mental capabilities such as linguistic processing, short-term memory, verbal working memory, verbal inference, abstract reasoning, auditory temporal processing, sensitivity to speech prosody, rapid automatized naming, decoding fluency, nonlinguistic abilities, grammar skills, phonological awareness, semantic rules, and letter knowledge.

Intellectual disability (ID) previously referred to as mental retardation, represents the prevailing developmental disability. According to Prelock & Hutchins (2018), ID is employed to describe a situation in which a child encounters specific constraints in their cognitive functioning and abilities, including communication, social interaction, and self-care skills. Children with these limitations exhibit slower or divergent patterns of development and learning compared to a child who has gone through normal development. According to the guidelines provided by Tassé Grover (2021), the American Association of Intellectual and Developmental Disabilities (AAIDD), an individual is classified as having an intellectual disability if they meet three specific criteria. Firstly, their IQ score falls below the range of 70-75. Secondly, they exhibit substantial limitations in at least two adaptive

domains, which involve essential skills necessary for functioning within the community, such as communication and self-care. Lastly, the onset of this condition occurs prior to the age of 18.

Given that a child's overall cognitive ability is regarded as a precursor to reading proficiency, it is unsurprising that numerous studies have indicated a notable prevalence of reading difficulties or illiteracy among children who have ID (e.g., Lemons et al., 2018). Several factors have been identified as contributing to reading difficulties in children with intellectual disabilities. These factors include deficits in memory, reasoning, decoding, and reading fluency (Lemons et al., 2018; van Wingerden et al., 2017), nonverbal intelligence and temporal processing (van Wingerden et al., 2018). Music has been demonstrated as a valuable approach for addressing various physiological, emotional and psychological aspects (Croom, 2014; Mofredj et al., 2016; Porter et al., 2016). Several successful applications of music employment have been observed in various contexts. For instance, Gramaglia et al. (2019) and Köhler et al. (2020) have explored music employment effect on individuals with cancer. Similarly, music has been employed with children diagnosed with attention deficit disorder, as evidenced by the studies conducted by Hosseini (2018), Darvishi et al. (2021), and Sholeh & Supena (2021). Music has been utilized for pain management, as demonstrated by the research conducted by Deng (2019) and Pathania et al. (2019). Last but not least, music has been integrated into pedagogy, as highlighted by the studies conducted by Coombes (2021) and Gallego-Gómez et al. (2020).

In the context of children who are diagnosed with ID, the absence of focused attention is a prevalent aspect that impedes their educational achievements when this issue persists for an extended duration. Hence, it is apparent that individuals with attention deficit experience difficulties in prioritizing information, resulting in ineffective application of acquired concepts. The impact of music employment and music therapy on the developmental progress of children who have special needs and intellectual disabilities has been recognized. Some studies has demonstrated that incorporating music into the classroom setting for these students can effectively enhance their performance in school, conduct, and interpersonal skills (Hammel & Hourigan, 2017; VanWeelden et al., 2017; Que, 2020; Oluseyi, 2021; Jacob & Pillay, 2021).

Wanicharoen and Boonrod's (2024) study focused on investigating the effectiveness of music therapy (MT) interventions on language skills in children with Specific language impairment (SLI) and to investigate the characteristics of other intervention features in these studies, such as interventionists, intervention, settings, session type, and music methods. The study was a systematic review conducted within the framework of the Preferred Reporting Items for Systematic Reviews and Meta Analyses (PRISMA). The quality of the research results was assessed using the critical appraisal tools provided by the Joanna Briggs Institute. Two studies met the inclusion criteria and were included in this systematic review. The two main types of MT employed were song cues and creative music therapy based on the Nordoff-Robbins approach. Current evidence suggests that music therapy improves components of language, including phonology, syntax, morphology, and other aspects of speech development, such as understanding sentences and memory for sentences, in children with SLI. MT can be a valuable and effective intervention for children with SLI. Jacob and Pillay (2021) investigated the effectiveness of music therapy in enhancing the reading abilities of students with intellectual disabilities using an experimental research approach. The use of music therapy was found to have a positive impact on the development of reading skills among students with intellectual disabilities. However, parents' socio-economic level did not have an effect on the reading ability. Mayer-Benarous

et al. (2021) conducted a systematic review of the efficacy of music therapy in children diagnosed with autistic spectrum disorder and/or other neuro-developmental problems. It was concluded that the majority of controlled research have demonstrated excellent results of educational and improvisational music therapy for individuals with Autism Spectrum Disorder. Similarly, Mina et al. (2021) conducted a systematic review of the role and efficacy of music therapy in individuals with learning disabilities. The findings of this study indicated that music therapy has a significant and complementary role in enhancing reading abilities and addressing phonological awareness difficulties in children with dyslexia.

In their study, Que et al. (2020) conducted a controlled user experiment to investigate the effect of tailored background music on reading comprehension. The experiment used a sample of 100 students. The results of the study suggested that selecting one's own background music during learning activities may have a favorable impact on retaining pleasant emotions, without any negative effects on reading performance. In a school setting catering to individuals with developmental impairments, Xiong (2020) carried out a study examining the effects of music therapies on a 9-year-old girl diagnosed with neuro-developmental problems. The study revealed that the establishment of a therapeutic relationship organically facilitated the development of the music experience, ultimately leading to the participant's growth. In a study conducted by Giaouri et al. (2020), the impact of visual perception on the reading abilities of 73 primary school students with learning difficulties was investigated. The results indicated that visual perception and reading performance are significantly correlated. In a quasi-experimental investigation, Torabi et al. (2018) delved into the impact of sound therapy on the reading abilities of 20 elementary school students who experienced difficulty in reading. It was concluded that sound therapy has a notable impact on the improvement of reading abilities, particularly among students who experience difficulty in reading. Hosseini & Hosseini (2018) conducted a comprehensive review on the therapeutic effects of music. They found that the utilization of music therapy has been found to provide beneficial outcomes in various domains, including pain management, sleep disorders, cognitive processes such as learning and memory, intelligence quotient (IQ), as well as psychological conditions such as depression, anxiety, schizophrenia, and autistic spectrum disorders. In conclusion, a study was carried out by Ratz and Lenhard (2013) to examine the reading ability of a sample of 1629 students with intellectual disabilities in Bavaria, Germany. It was revealed that 29.3% of the participants do not read at all, 6.8% read at a logographic stage, 31.9% at an alphabetic and 32% at an orthographic level.

3. Material and Methods

3.1. Research Design and Context

An experimental design was utilized to elucidate the effect of music as an independent variable on reading abilities of children with mild intellectual disability as a dependent variable, taking age and gender into consideration. The participants, 35 children with mild intellectual disability, were selected from a special education school in Kerman, Iran, and were randomly assigned into experimental and control groups where the experimental class experienced music intervention.

3.2. Participants

A sample of 35 children with mild intellectual disability, as determined by the Slosson Intelligence Test 4th Edition (2017), were selected through purposive sampling strategy to take part in the study. Prior to their inclusion, assent and informed consent were obtained from the children and parents. The sample consisted of both male participants ($n = 17$) and female participants ($n = 18$), as gender was selected as one of the variables for the investigation. The participants were chosen from a special education school located in Kerman, Iran. Their ages ranged from eight (8) to thirteen (13). There were two inclusion criteria for the selection of children in this study: (1) a minimum requirement of two years of enrollment in a formal educational institution, and (2) voluntary willingness to actively engage in the research. The researcher proceeded to select a class as the sample in order to obtain data that is representative of the population. The selected class was then randomly separated into two groups: an experimental class (EG-N = 17) and a control class (CG-N = 18). The participants were EFL true beginners and Persian native speakers.

3.3. Instruments

The instruments employed in this study included (1) a placement test, (2) Slosson Intelligence test, (3) a reading skills test, and (4) a music package.

This first instrument, the norm-referenced SIT-4 test, is specifically intended to assess individuals ranging in age from 4 to 65 years. The SIT-4 assesses six verbal cognitive domains, including (1) the acquisition of cultural knowledge (2) comprehension, (3) quantitative proficiency, (4) comparisons and contrasts, (5) lexical proficiency, and (6) auditory memory. Over the course of time, the reliability coefficient (KR-20) of the test exhibited a range of values spanning from 0.88 to 0.97. The instrument was initially in English and was subsequently translated into Persian utilizing the translation and back-translation approach, which aligns with the language used by the participants. Upon obtaining a Cronbach's Alpha reliability coefficient of 0.87, it was determined that the test instrument had reached an acceptable level of reliability and was deemed appropriate for implementation.

The second instrument used in this study was Cambridge English Placement Test for Young Learners to evaluate the English proficiency level of the participants. This test is standardized, efficient, and cost-effective, making it a suitable method for placing kids in English language courses. The examination comprises a listening component consisting of four sections, each including five inquiries. Each section commences with an illustrative instance. The students are exposed to each component of the material twice. The subsequent segment of the examination includes the reading and writing components, which consist of four distinct sections, each containing a maximum of ten inquiries. Each section commences with an illustrative example.

The third instrument, a researcher-made reading skill test, was designed to collect data on the progress of reading skill in young learners with intellectual disability. A textbook titled "Family and Friends Starter" was chosen to construct the test. The test consisted of four (4) components. After completion of the demographic information (Part 1), the participants were requested to do a matching task consisted of 10 items in which a set of words had to be matched with corresponding pictures (Part 2). For instance, the participants were presented with an image depicting a "bag" with several various

textual representations, and were required to associate the image with the appropriate written representation of the term "bag". In Part 3, the children were presented with another matching task consisting of ten items. They were instructed to read a sentence describing a certain event, and match it to a set of corresponding pictures. Part 4, included ten sentences, aimed to determine the reading aloud skill of the learners. The reading test was subjected to pilot testing, as well as face and content validation.

A music package containing Khale Shadouneh and Amou Pourang songs were employed for the music therapy phase in this investigation. The mentioned individuals are Iranian television presenters who are famous for their songs performances specifically for children. The music therapy intervention included a total of twenty sessions, with each session lasting 45 minutes, for the treatment group. Prior to the phase focused on teaching reading skills, participants in the experimental class were encouraged to actively engage in singing along, hopping and moving to the songs. In contrast, the control group did not receive any music intervention. Among Pourang's songs, 10 most popular ones namely (1) Baleshha, (2) Ordak TakTak, (3) Tavalod, (4) Dar Ghandoun, (5) Ranande Khoub, (6) Rouze Poromid, (7) Bache Khoub, (8) Hamyare Police, (9) Eyd Umade, and (10) Beheshte Ru Zamine were selected to serve the study purpose. Among Khale Shadouneh's songs in her TV series, the most 10 top popular ones were employed in this investigation, (1) Bahar, (2) Eid, (3) Tavalodet Mobarak, (4) Iran, (5) Baroun, (6) Shir, (7) Salam, (8) Khodahafezi, (9) Tabestoun, and (10) Ki Mahe Ki Setare.

3.4. Data Collection and Analysis

To investigate the effect of music on reading skills development of young EFL learners with mild intellectual disability, some steps were executed. Initially, after the special education school was selected, necessary permission to conduct the research was secured from the school principals. Later it was time for obtaining children's assent as well as their parents' consents. Next, the researcher divided the sample into two classes, taking the children level of intellectual disability into account, according the schools' data center. Although children in this school took IQ tests at the time they were being enrolled, to follow research procedures, and prevent any potential difficulties once more an IQ test, Slosson Intelligence Test-4th Edition (SIT-4), was administered to all participants reassuring their intellectual disability level. After this step, the participants took Cambridge English Placement Test for Young Learners to make sure they were homogeneous in terms of language proficiency. It was revealed that they were homogenized in terms of language proficiency and were true beginners. Subsequently, the experimental and control groups were selected by the utilization of the lottery technique within the framework of simple random sampling.

Family and Friends Starter book was selected as the main teaching material in both experimental and control groups since this material is specifically designed for primary language learners and attempts to develop learners' all language skills including reading. This study was conducted through six weeks, 10 sessions, while each session took 45 minutes and 2 sessions were taught each week. The experimental group received the treatment, music intervention in the reading sessions, while the control group experienced the same teaching procedure without the introduction of the music. Finally, to compare the effect of music on the reading skills of the participants, the post tests were administered. Concerning statistical analysis, to analyze if the reading skills of EFL young learners in the experimental class was different from that of the control class in post-tests, taking age range and gender

into consideration, the two-way ANOVA was employed. It should be noted that The Shapiro-Wilk test was conducted to examine if the variables were normally distributed.

4. Results

4.1. RQs 1 and 2. What is the effect of music on the development of reading skills in general as well as in male and female EFL young learners with intellectual disabilities?

The first aim of this study was to assess the potential influence of including songs into English as a Foreign Language lessons for young EFL learners with mild intellectual disability, specifically focusing on the improvement of their reading skills. Furthermore, the second research purpose sought to determine whether a distinction existed between male and female English learners with mild intellectual disability in terms of the impact of songs on their reading skill enhancement. Table 1 presents the participants' count for both the experimental group (17) and the control group (18), together with a description of the gender distribution. As evident from the data, among the total of 35 participants, 17 were male and 18 were female children.

Table 1. Between-subjects factors / groups-gender.

		N
Groups	CONT	18
	EXP	17
Gender	F	18
	M	17

Table 2 presents the numerical values, including the number of observations, mean, and standard deviation, for every possible combination of the independent variable groups in the post tests. It should be noted that the reading test score ranged from 0, representing the lowest score, to 20, representing the best score. In regard to the reading scores of different groups, as depicted in Table 2, the average reading post test scores for male and female learners in the experimental group are 15.87 and 16.11, respectively. Conversely, the mean scores for male and female learners in the control group are considerably lower, at 12.11 and 12.67, respectively.

Table 2. Descriptive statistics / groups – gender.

Groups	Gender	Mean	Std. Deviation	N
CONT	F	12.67	2.784	9
	M	12.11	2.421	9
	Total	12.39	2.547	18
EXP	F	16.11	2.261	9
	M	15.87	2.232	8
	Total	16.00	2.179	17
Total	F	14.39	3.032	18
	M	13.88	2.977	17
	Total	14.14	2.972	35

A two-way analysis of variance (ANOVA) test was conducted to investigate the impact of music on the development of reading skills in male and female children with intellectual disability. Based on the data shown in the groups row of Table 3, there is a statistically significant difference seen at the $P = .037$ level. Hence, it can be inferred that a significant difference exists in the mean reading scores between the experimental and control groups in the post tests. This suggests that children with mild intellectual disability in the experimental group exhibited superior performance in their post-reading assessments when compared to their counterparts in the control group. It can be concluded that the utilization of music-based interventions positively influences the advancement of reading skills in young EFL learners with mild intellectual disability. In contrast, when examining the second study question concerning the potential difference between male and female children, an analysis of the Gender and Groups-gender rows in Table 3 reveals that the Sig column indicates P-values of .257 and .848, respectively. Therefore, it can be inferred that there is no statistically significant difference in the mean reading post-scores between male and female children in the experimental and control groups. Consequently, it is concluded that males and females in the experimental group did not exhibit a higher likelihood of achieving superior reading skills compared to those in the control group when exposed to music.

Table 3. Tests of between subjects effects / groups – gender.

Source		Type II Sum of Squares	df	Mean Square	F	Sig.
Groups	Hypothesis	113.167	1	113.167	533.548	.037
	Error	.192	.904	.212 ^a		
Gender	Hypothesis	1.402	1	1.402	6.612	.257
	Error	.192	.904	.212 ^b		
Groups * Gender	Hypothesis	.223	1	.223	.037	.848
	Error	184.653	31	5.957 ^c		

a. $1.002 \text{ MS}(\text{Groups} * \text{Gender}) - .002 \text{ MS}(\text{Error})$

b. $1.002 \text{ MS}(\text{Groups} * \text{Gender}) - .002 \text{ MS}(\text{Error})$

c. $\text{MS}(\text{Error})$

Table 4. Expected mean squares ^{a,b} groups – gender.

Source	Var(Gender)	Var(Groups * Gender)	Var(Error)	Quadratic Term
Groups	.000	8.743	1.000	Groups
Gender	17.471	8.743	1.000	
Groups * Gender	.000	8.727	1.000	
Error	.000	.000	1.000	

a. For each source, the expected mean square equals the sum of the coefficients in the cells times the variance components, plus a quadratic term involving effects in the Quadratic Term cell.

b. Expected Mean Squares are based on the Type II Sums of Squares.

4.2. RQ3. Do EFL younger learners with intellectual disabilities exhibit an increased likelihood of developing reading skills when exposed to music?

The third research objective sought to examine whether a significant difference exists between younger and older English learners with mild intellectual disability in terms of the impact of songs on their

reading skill growth. As can be seen in Table 5, among the total of 35 participants, 17 individuals were under the age range of 8-10 years, while 18 participants were aged between 11-13 years.

Table 5. Between-subjects factors / groups-age.

		N
Groups	CONT	18
	EXP	17
Age	11-13	18
	8-10	17

As can be seen in Table 6, the experimental group exhibited higher post-test scores compared to the control group. Specifically, the reading post-test scores for age groups 8-10 and 11-13 in the experimental group were 15.63 and 16.33, respectively. In contrast, the control group displayed lower mean scores for the same age groups, with scores of 12.22 and 12.56, respectively.

Table 6. Descriptive statistics / groups – age.

Groups	Age	Mean	Std. Deviation	N
CONT	11-13	12.56	2.877	9
	8-10	12.22	2.333	9
	Total	12.39	2.547	18
EXP	11-13	16.33	2.000	9
	8-10	15.63	2.446	8
	Total	16.00	2.179	17
Total	11-13	14.44	3.091	18
	8-10	13.82	2.899	17
	Total	14.14	2.972	35

Table 7 presents the results of a two-way analysis of variance (ANOVA) test to investigate the impact of music on the development of reading skills in young EFL learners with intellectual disability, specifically focusing on two age groups: 8-10 and 11-13 years old. When examining the age groups in Table 7, the significance column indicates that the corresponding p-values are 0.233 and 0.821. Hence, it can be inferred that there is no significant difference in the mean reading scores between younger children (aged 8-10) and older children (aged 11-13) in both the experimental and control groups' post-tests. It is concluded that younger children and older children in the experimental group do not exhibit a higher likelihood of achieving superior reading skills compared to those in the control group when exposed to music.

Table 7. Tests of between subjects effects / groups – age.

Source		Type II Sum of Squares	df	Mean Square	F	Sig.
Groups	Hypothesis	112.955	1	112.955	380.973	.040
	Error	.276	.930	.296 ^a		
Age	Hypothesis	2.318	1	2.318	7.819	.233
	Error	.276	.930	.296 ^b		

Groups * Age	Hypothesis	.307	1	.307	.052	.821
	Error	183.653	31	5.924 ^c		
a. 1.002 MS(Groups * Age) - .002 MS(Error)						
b. 1.002 MS(Groups * Age) - .002 MS(Error)						
c. MS(Error)						

Table 8. Expected mean squares ^{a,b} groups / age

Source	Variance Component			
	Var(Age)	Var(Groups * Age)	Var(Error)	Quadratic Term
Groups	.000	8.743	1.000	Groups
Age	17.471	8.743	1.000	
Groups * Age	.000	8.727	1.000	
Error	.000	.000	1.000	

a. For each source, the expected mean square equals the sum of the coefficients in the cells times the variance components, plus a quadratic term involving effects in the Quadratic Term cell.

b. Expected Mean Squares are based on the Type II Sums of Squares.

5. Discussion

The primary aim of the present study was to assess the potential influence of incorporating songs into EFL lessons for children with mild intellectual disability on the improvement of their reading skills. In regards to the reading scores of groups, the average reading test scores of male and female learners in the experimental group were found to be greater than those of their counterparts in the control group. Additionally, a statistically significant difference was observed in the mean reading scores between the experimental and control groups. Hence, it can be concluded that the utilization of music yields an influence on the enhancement of reading skills among young EFL learners with mild intellectual disability. The present finding aligns with a comprehensive review conducted by Hosseini and Hosseini (2018) on the therapeutic impacts of music. Their study revealed that music therapy exhibits favorable outcomes in the management of various conditions, including pain, sleep disorders, cognitive abilities (learning, memory, IQ), mental health (depression, anxiety), and specific disorders such as schizophrenia and autism. Furthermore, the findings are consistent with a study conducted by Torabi et al. (2018) that examined the impact of sound therapy on the reading abilities of students experiencing difficulties in reading. The results of their study demonstrated that the implementation of sound therapy yielded a noteworthy impact on the development of reading abilities, particularly among children who have challenges in this domain.

Mina et al. (2021) conducted a comparable study wherein they conducted a systematic review on the role and effectiveness of music therapy in individuals with learning disabilities. The findings of their investigation indicated that a majority of the studies included in the review reported that music therapy is a beneficial adjunctive intervention in the rehabilitation therapy for reading and phonological awareness disorders. In a study conducted by Dada (2021), an examination was conducted to explore the potential of music therapy in improving the attention span of children with intellectual disabilities. The present study's results align with previous findings, indicating that music therapy has a notable impact on improving attention in children with intellectual disability, irrespective of their gender or ID severity level. Jacob and Pillay's (2021) findings regarding the efficacy of music therapy in enhancing the reading abilities of students with intellectual disabilities align with this study's results. Finally, the present study's findings contradicts the assertion made by Anderson and Fuller (2010), wherein they

documented a significant decrease in reading comprehension among students who were exposed to lyrical music.

The second research objective was to determine whether there exists a distinction between male and female young EFL learners with mild intellectual disability in terms of the impact of songs on their reading skill enhancement. Despite the slightly higher scores of female participants compared to males in both the experimental and control groups, the outcomes of a two-way ANOVA analysis did not reveal a significant difference in the mean reading scores between male and female children in either group. Consequently, it can be concluded that exposure in to music does not result in a higher likelihood of improved reading skills for males or females in the experimental group compared to those in the control group. Upon conducting a comprehensive review of the pertinent literature, it was observed that there is a paucity of research examining potential differences between male and female children with mild intellectual disability in terms of the impact of songs on their reading skill enhancement. One study that aligns with the aforementioned research issue is the investigation conducted by Oluseyi (2021), which examined the impact of music therapy on boosting the attention of children with intellectual disability in the context of learning. The findings of this study indicate that music therapy did not have a significant impact on gender and the degree of intellectual disability levels. The study's findings indicated that attention deficit in children with intellectual disability could be enhanced irrespective of their gender.

The third research objective sought to determine whether a distinction existed between younger and older English learners with mild intellectual disability in terms of the impact of songs on their reading skill enhancement. Among the sample of 35 participants, age range of 8 to 10, and 11 to 13, the mean scores of participants aged 11-13 were slightly higher than their counterparts in both groups. However, it was concluded that younger children and older children in the experimental group were not significantly different. Upon conducting a comprehensive review of the existing literature in the domains of TEFL, education, and psychology, it was observed that there is a dearth of research investigating potential differences between younger and older children with mild intellectual disabilities in terms of the impact of songs on their reading skill enhancement. Hence, the study failed to describe, analyze, and establish connections between comparable or conflicting research findings.

6. Conclusion and Implication

According to various researchers, reading comprehension is an important cognitive process that involves language and cognitive abilities. Proficiency in reading is crucial for students to acquire information and achieve educational goals. Lack of reading skills during early schooling can hinder academic achievement. Individuals with intellectual disability face challenges in reading and comprehension due to various factors including the reading process and cognitive abilities. It is crucial to establish policies that focus on identifying early signs of poor reading skills to ensure a strong foundation in literacy and reading for students. Early intervention measures can be implemented to address reading difficulties. Various studies have suggested music therapy as an alternative approach to support students with intellectual disabilities in acquiring essential reading skills. This intervention is believed to enhance auditory processing abilities, cognitive capacities, and provide other benefits.

Given the significance of this matter and the limited amount of existing studies conducted in the Iranian context, the present study aimed to examine the influence of music on the reading proficiency and comprehension abilities of Iranian young EFL learners with mild intellectual disabilities. This investigation took into account both gender and age as potential factors that might affect the outcomes. The findings of this study indicated that the employment of music had a beneficial effect on the development of reading skills in children with modest intellectual disability. Furthermore, the study findings indicated that there were no statistically significant differences in the development of reading comprehension among male and female children, as well as younger and older individuals, who were subjected to music therapy.

Since there is a lack of research on the specific influence of songs on reading development in this population, both in Iran and internationally, the results of this study can contribute to the existing literature in this field. The study can provide valuable insights for educators and policymakers about the benefits of using songs to improve reading comprehension in children with mild intellectual disabilities. Conducting similar research in diverse contexts and with different language competencies and age groups can help determine if similar outcomes are achieved. Additional research on the impact of music on other language abilities could further enhance the existing literature in this field.

Conflict of interest: There is no conflict of interest in this study.

Acknowledgements: The researchers find it necessary to express their utmost appreciation and gratitude to all those who assisted them in conducting this study.

References

- Coombes, E. (2021). *A continuum of music therapy practice and pedagogy* [Doctoral dissertation, University of South Wales]. https://pure.southwales.ac.uk/files/5528568/E_Coombes_Critical_Review_Output_Document.pdf
- Croom, A. M. (2014). Music practice and participation for psychological well-being: A review of how music influences positive emotion, engagement, relationships, meaning, and accomplishment. *Musicae Scientiae*, 19(1), 44–64. <https://doi.org/10.1177/1029864914561709>
- Darvishi, A., Mirghaemi, T., & Taher, M. (2021). Effectiveness of music therapy on sustained attention and selective attention in children with attention deficit/hyperactivity disorder. *Rooyesh-e-Ravanshenasi Journal (RRJ)*, 10(3), 77–88. <http://frooyesh.ir/article-1-2428-fa.html>
- Deng, G. (2019). Integrative medicine therapies for pain management in cancer patients. *The Cancer Journal*, 25(5), 343–348. <https://doi.org/10.1097/ppp.0000000000000399>
- Ellis, A. W. (2016). *Reading, writing and dyslexia: A cognitive analysis*. Psychology Press. <https://doi.org/10.4324/9781315669991>
- Gallego-Gómez, J. I., Balanza, S., Leal-Llopis, J., García-Méndez, J. A., Oliva-Pérez, J., Doménech-Tortosa, J., Gómez-Gallego, M., Simonelli-Muñoz, A. J., & Rivera-Caravaca, J. M. (2020). Effectiveness of music therapy and progressive muscle relaxation in reducing stress before exams and improving academic

- performance in nursing students: A randomized trial. *Nurse Education Today*, 84, Article 104217. <https://doi.org/10.1016/j.nedt.2019.104217>
- Giaouri, S., Rachanioti, E., Antoniou, A. S., & Alevriadou, A. (2020). Revisiting the role of visual perception on the reading skills of students with learning disabilities: Some educational planning challenges. *European Journal of Special Education Research*, 5, (3), 81-99. <https://doi.org/10.5281/zenodo.3666758>
- Gramaglia, C., Gambaro, E., Vecchi, C., Licandro, D., Raina, G., Pisani, C., Burgio, V., Farruggio, S., Rolla, R., Deantonio, L., Grossini, E., Krengli, M., & Zeppegnò, P. (2019). Outcomes of music therapy interventions in cancer patients: A review of the literature. *Critical Reviews in Oncology/Hematology*, 138, 241–254. <https://doi.org/10.1016/j.critrevonc.2019.04.004>
- Hosseini, S. E. (2018). Effects of music therapy on aggression and hyperactivity symptoms and attention deficit in children with attention deficit-hyperactivity disorder. *Psychological Methods and Models*, 8 (30), 41-52. https://jpmm.marvdasht.iau.ir/article_2715.html
- Hosseini, S. E., & Hosseini, S. A. (2018). Therapeutic effects of music: A review. *Report of Health Care*, 4 (4), 1-13. https://jrhc.marvdasht.iau.ir/article_2998.html
- Hourigan, R. M., & Hammel, A. M. (2017). Understanding the mind of a student with autism in music class. *Music Educators Journal*, 104(2), 21-26. <https://doi.org/10.1177/0027432117732386>
- Jacob, U. S., & Pillay, J. (2021). Effectiveness of music therapy on reading skills of pupils with intellectual disability. *Cypriot Journal of Educational Sciences*, 16(1), 251–265. <https://doi.org/10.18844/cjes.v16i1.5526>
- Kim, Y. S. G. (2017). Why the simple view of reading is not simplistic: Unpacking component skills of reading using a direct and indirect effect model of reading (DIER). *Scientific Studies of Reading*, 21(4), 310-333. <https://doi.org/10.1080/10888438.2017.1291643>
- Köhler, F., Martin, Z. S., Hertrampf, R. S., Gäbel, C., Kessler, J., Ditzen, B., & Warth, M. (2020). Music therapy in the psychosocial treatment of adult cancer patients: A systematic review and meta-analysis. *Frontiers in Psychology*, 11, Article 651. <https://doi.org/10.3389/fpsyg.2020.00651>
- Lemons, C. J., Allor, J. H., Al Otaiba, S., & LeJeune, L. M. (2018). 10 research-based tips for enhancing literacy instruction for students with intellectual disability. *Teaching Exceptional Children*, 50(4), 220–232. <https://doi.org/10.1177/0040059918758162>
- Mayer-Benarous, H., Benarous, X., Vonthron, F., & Cohen, D. (2021). Music therapy for children with autistic spectrum disorder and/or other neurodevelopmental disorders: a systematic review. *Frontiers in Psychiatry*, 12, Article 643234. <https://doi.org/10.3389/fpsyg.2021.643234>

- Mina, F., Darweesh, M. E. S., Khattab, A. N., & Serag, S. M. (2021). Role and efficacy of music therapy in learning disability: A systematic review. *The Egyptian Journal of Otolaryngology*, 37(1), 1-12. <https://doi.org/10.1186/s43163-021-00091-z>
- Mofredj, A., Alaya, S., Tassaoust, K., Bahloul, H., & Mrabet, A. (2016). Music therapy: A review of the potential therapeutic benefits for the critically ill. *Journal of critical care*, 35, 195-199. <https://doi.org/10.1016/j.jcrc.2016.05.021>
- Oluseyi, D. A. D. A. (2021). Identifying mathematics underachieving gifted in classroom. *Journal for the Education of Gifted Young Scientists*, 9(3), 207-213. <https://dergipark.org.tr/en/download/article-file/1888231>
- Pathania, S., Slater, L. Z., Vose, C., & Navarra, A. M. (2019). Music therapy and pain management in patients with end-stage liver disease: An evidence-based practice quality improvement project. *Pain Management Nursing*, 20(1), 10-16. <https://doi.org/10.1016/j.pmn.2018.07.004>
- Porter, S., McConnell, T., McLaughlin, K., Lynn, F., Cardwell, C., Braiden, H., Boylan, J., & Holmes, V. (2016). Music therapy for children and adolescents with behavioral and emotional problems: A randomized controlled trial. *Journal of Child Psychology and Psychiatry*, 58(5), 586-594. <https://doi.org/10.1111/jcpp.12656>
- Prelock, P. A., & Hutchins, T. L. (2018). *Clinical guide to assessment and treatment of communication disorders: Children with intellectual disability*. Springer Cham. <https://doi.org/10.1007/978-3-319-93203-3>
- Que, Y., Zheng, Y., Hsiao, J. H., & Hu, X. (2020, August). Exploring the effect of personalized background music on reading comprehension. *Proceedings of the ACM/IEEE Joint Conference on Digital Libraries in 2020 (JCDL '20)*, USA, 57-66. <https://doi.org/10.1145/3383583.3398543>
- Ratz, C., & Lenhard, W. (2013). Reading skills among students with intellectual disabilities. *Research in Developmental Disabilities*, 34(5), 1740-1748. <https://doi.org/10.1016/j.ridd.2013.01.021>
- Sholeh, A., & Supena, A. (2021). A children's music therapy to enhance the self-esteem of children with Attention Deficit Hyperactivity Disorder (ADHD) in elementary school. *Al Ibtida: Jurnal Pendidikan Guru MI*, 8(1), 93-103. <https://doi.org/10.24235/al.ibtida.snj.v8i1.7459>
- Simmons, N. (2019). *Family and Friends Starter (2nd Ed.)*. Oxford University Press.
- Suk, N. (2016). The effects of extensive reading on reading comprehension, reading rate, and vocabulary acquisition. *Reading Research Quarterly*, 52(1), 73-89. <https://doi.org/10.1002/rrq.152>
- Tassé, M. J., & Grover, M. (2021). American Association on Intellectual and Developmental Disabilities (AAIDD). In F. R. Volkmar (Ed.), *Encyclopedia of autism spectrum disorders* (pp. 165-168). Springer International Publishing. https://doi.org/10.1007/978-1-4419-1698-3_1820

- Torabi, Z., Estaki, M., Entezar, R., & Sharifi, N. (2018). The effect of sound therapy on reading skills of students with reading difficulties. *Journal of Garmian University*, 5(3), 454–464. <https://doi.org/10.24271/garmian.383>
- Tunmer, W. E., & Hoover, W. A. (2017). Cognitive and linguistic factors in learning to read. In P. B. Gough, L. C. Ehri, & R. Treiman (Eds.), *Reading acquisition*, (pp.175–214). Routledge. <https://doi.org/10.4324/9781351236904-7>
- van Wingerden, E., Segers, E., van Balkom, H., & Verhoeven, L. (2017). Foundations of reading comprehension in children with intellectual disabilities. *Research in developmental disabilities*, 60, 211–222. <https://doi.org/10.1016/j.ridd.2016.10.015>
- van Wingerden, E., Segers, E., van Balkom, H., & Verhoeven, L. (2018). Cognitive constraints on the simple view of reading: A longitudinal study in children with intellectual disabilities. *Scientific Studies of Reading*, 22(4), 321–334. <https://doi.org/10.1080/10888438.2018.1446435>
- Wanicharoen, N., & Boonrod, V. (2024). Effect of music therapy on language skills in children with specific language impairment: A systematic review. *Journal of Associated Medical Sciences*, 57(1), 96–103. <https://doi.org/10.12982/jams.2024.011>
- Xiong, Z. (2020). Music interventions for a non-speaking child with developmental disabilities: Development of relationship-based music therapy method in school settings. [Master's thesis, Lesley University]. https://digitalcommons.lesley.edu/cgi/viewcontent.cgi?article=1377&context=expressive_theses